If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.
Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.

C-A OPERATIONS PROCEDURES MANUAL

8.20.2 Radioactive Waste Disposal

Text Pages 2 through 6

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: ***Signature on File*** _____
Collider-Accelerator Department Chairman — Date

J. Scott

8.20.2 Radioactive Waste Disposal

1. Purpose

This procedure provides instructions for all C-A Department employees for the safe handling and disposal of radioactive materials.

2. Responsibilities

2.1 Each supervisor is responsible for ensuring that employees under their purview handle, accumulate, or dispose of radioactive waste, using adequate controls and documentation. Refer to SBMS Subject Area "Radioactive Waste Management", "Transfer of Radioactive Materials Onsite".

2.1.1 Each supervisor must ensure that the workers have appropriate training as per SBMS Subject Areas.

2.2 Each employee shall minimize the amount of radioactive waste they generate and follow this procedure when disposing of such waste.

2.2.1 Each employee shall complete the necessary radioactive waste forms with the assistance of the C-A Environmental Coordinator (EC).

2.3 The C-A EC (Ext. 7520, pager 4234) shall:

2.3.1 maintain the Radioactive Waste Inventory Log,
2.3.2 perform radioactive waste container total curie content calculations, and
2.3.3 complete the Radioactive Waste Control Form.

3. Prerequisites

3.1 All employees and supervisors must be trained radiation workers.

3.2 All persons packing C-A radioactive waste bins must be trained by the BNL Hazardous Waste Management Group.

3.3 All persons transporting waste to Bldg. 965 must follow guidelines of SBMS Subject Area, "Transfer of Radioactive Materials Onsite".

3.4 Monthly survey of waste yard by Facility Support (FS) Tech is used to identify bin RAD levels. Contact FS (Ext. 4660) to survey waste bins and fill out labels prior to shipping to waste management.

3.4.1 Have FS place a radioactive material tag on each item or bag of waste.

3.5 Waste packing yard Bldg. 965 is located north of Bldg. 960 (old 80" Bubble Chamber) and because of telephone pole fence on one side, is referred to as Fort Apache.

4. Precautions

Warning:
In the event of a spill contact Fire/Rescue at Ext. 2222 or 911 and report spill and the fact that it is radioactive material.

5. Procedures

Note:
Whenever practical, supervisors shall alert the EC during the weekly C-A Supervisors Meeting that significant amounts of radioactive waste will be generated.

5.1 Request for Containers

The C-A Environmental Coordinator (EC) maintains waste bins in the waste yard in Bldg. 965. Refer to section 5.3 for instructions on delivering waste to the yard. If a C-A Supervisor requires a bin in his/her area for waste, contact C-A EC Ext. 7520/(4234) to make arrangements.

5.2 When new containers are delivered from the Waste Management Division, the EC shall check and record each container number into the Radioactive Waste Inventory log.

5.2.1 Types of containers.

5.2.1.1 Bins 4' x 4' x 6' = 96 cu feet
5.2.1.2 55-gal. Drums 24" diam x 34" high = 7.5 cu feet
5.2.1.3 Land and Sea Containers 4.5' x 8' x 20' = 640 cu feet
5.2.1.4 Bin 3’x 8’x 13’ = 312 cu feet
5.2.1.5 Bin 2' x 4' x 6' = 48 cu feet

5.2.2 EC shall record unique bin ID number provided by HWM.

5.2.3 EC shall assign ID numbers for 55-gallon drums.

5.3 The EC shall direct supervisors to segregate their C-A wastes (wood, plastic, ceramic, filters, copper, steel, aluminum, etc.), prior to delivering wastes to waste packing yard in Bldg. 965.

5.3.1 The new yard is fenced, locked, and posted as a Radioactive Material Area. Do not drop off wastes outside the fence. Contact Waste Management Technician, Ext. 7182, or pager 9033, or the Environment Coordinator, Ext. 7520, or pager 4234, to open yard for waste drop off.

5.3.2 The following are radioactive waste drop off requirements. If you cannot meet these requirements, contact individual in section 5.3.1 to determine what to do.

Note:
Refer to list of prohibited items in low-level waste packages SBMS Radioactive Waste Subject Area. Light bulbs, lead, fuses, electrical equipment with solder, batteries, aerosol cans, chemical, and wet or liquid waste, has to be processed and bagged separately for handling.

5.3.2.1 In order to fit waste into containers, ensure long sections are no longer 4-feet. Large items that cannot be cut up will be dealt with prior to moving into the waste yard.

5.3.2.2 All soldered fittings, i.e. valves, flanges, etc., shall be cut out of piping and separated.

5.3.3 Brass and copper fittings from hoses and bus bar shall be cut off and separated. These fittings contain bronze and lead and are packaged separately from hoses and buss bar.

5.3.4 Separate bagged waste. Place compatible waste in separate bags from non-compatible waste. Also double bag all waste to minimize the possibility of an unintentional release of material.

5.3.5 The EC shall ensure each container is labeled with the type of material with which they are filled. Examples are:

- Bin # 12-000 Aluminum
- Bin # 12-001 Steel
- Bin # 12-002 Copper
- Bin # 12-003 Micarta

5.4 Place heavy metals into 55-gallon drums.
Examples of heavy-metal components are:
Components with soft or silver solder
Silver plated parts
Brass parts

5.5 Filling Containers

5.5.1 The Radiation Waste Technician will make the appropriate entries in the Waste Inventory Log Book when the waste bins are packed.

5.5.2 The EC shall notify the QA representative (Ext. 7251, or Pager 6026) from HWM when containers are half full, three-quarters full, and completely filled.

5.6 Disposal of Containers

5.6.1 The EC shall call HP, Ext. 4660, to perform a radiation survey of each container.

5.6.2 The EC shall have each container weighed.

5.6.3 The EC shall enter information from 5.6.1 and 5.6.2 onto a Radioactive Waste Control Form (yellow).

5.6.4 The EC shall perform a calculation to determine the curie content of each container, and enter the data on the Radioactive Waste Control Form.

5.7 Calculation of Curie Content of Containers

5.7.1 The EC shall submit representative samples of waste to the RCD Division, or Analytical Services Laboratory (ASL), for analysis of radionuclide content. The sample shall be used to represent the relative amounts of each radionuclide in all waste from the waste bin in question.

5.7.2 A previously obtained representative sample analysis can be used in a calculation. This is done since bins containing materials similar to those analyzed previously at C-A do not differ significantly in relative proportions of radionuclides. For example, bins containing aluminum always have about the same ratio of Co-60 to Na-22.

5.7.3 Use the RADWASTE program to calculate individual and total nuclide activities, etc.

5.8 Release of Containers to HWM

5.8.1 After completing the Radioactive Waste Control Form, the EC, with the assistance of the waste technicians, shall arrange for transporting the container(s) to HWM in accordance with SBMS Subject Areas, "Radioactive Waste Management" and "Transfer of Radioactive Materials Onsite".

6. Documentation

6.1 Radioactive Waste Inventory Log Book

6.2 Calculation of Curie Content

7. References

7.1 BNL SBMS Subject Area "Radioactive Waste Management"

7.2 BNL SBMS Subject Area "Prohibited Articles in Radioactive Solid Waste Packages"

7.3 BNL SBMS Subject Area "Transfer of Radioactive Materials Onsite".

8. Attachments

None